WHAT IS CLAIMED IS:

1. A device manufacturing method comprising

performing a first exposure by patterning a beam of radiation with a first pattern in its cross-section, said first pattern including a desired dark isolated feature in a bright local region and being dark proximate the bright local region; and projecting the patterned beam of radiation onto a target portion of a layer of radiation-sensitive material on a substrate; and

performing a second exposure by patterning the beam of radiation with a second pattern in its cross-section, said second pattern being dark in a region substantially corresponding to said bright local region and bright in a wider region around said local region; and projecting the patterned beam of radiation onto the target portion of the layer of radiation-sensitive material;

wherein said first and second exposures are carried out in either order; and

wherein first illumination settings are used in said first exposure and second illumination settings are used in said second exposure, said second illumination settings being different than said first illumination settings.

2. A method according to claim 1 wherein said second illumination settings are arranged so that in the second exposure substantially no radiation enters the dark region corresponding to the local bright region in the first exposure.

3. A method according to claim 1 wherein said first and second illumination settings differ in illumination mode and/or at least one parameter of the illumination mode

4. A method according to claim 3 wherein said illumination mode is one of a conventional, an annular, a dipole and a quadrupole mode.

5. A method according to claim 3 wherein said at least one parameter of the illumination mode is one of NA, σ, σ_{inner}, σ_{outer}, orientation of multipole modes, polarization, dose, focus, lens settings and exposure wavelength bandwidth.

6. A method according to claim 1 wherein said dark isolated feature is a contact hole and said radiation sensitive material is negative tone resist.

7. A method according to claim 6 wherein said first and second illumination settings are quadrupole illumination modes with poles on the diagonals but with the poles nearer the optical axis in the second illumination settings.

8. A method according to claim 6 wherein the first and second illumination settings include NA of a projection system and the value of NA is smaller in the second illumination settings than in the first.

9. A method according to claim 1 wherein said dark isolated feature is an isolated line.

10. A method according to claim 9 wherein said first illumination settings include a dipole illumination mode with the poles on the axis perpendicular to the isolated line and said second illumination settings include a dipole illumination mode with the poles on the axis parallel to the isolated line.

11. A method according to claim 9 wherein the half-width of the local region is in the range of from 1.5 to 5 times a target width of the isolated line.

12. A method according to claim 1 whereby said first pattern further comprises an extended bright local region comprising dark, dense features, said first pattern further being dark around said extended local region, said second pattern being dark in a region substantially corresponding to said bright local region and said extended bright local region, and being bright in a wider region around said local region and said extended local region.

13. A method according to claim 12 whereby said dense features are dense contact holes.

14. A method according to claim 13 whereby said dense contact holes are spaced apart at a pitch between two and four times a target width of the contact holes.

15. A method according to claim 1 whereby said wider region of the second pattern further comprises dark, medium-dense features.

16. A method according to claim 15 whereby said medium dense features are contact holes.

17. A method according to claim 13 whereby said dense contact holes are spaced apart at a pitch between two and three times a target width of the contact holes and said wider region of the second pattern further comprises dark, medium-dense contact holes spaced apart at a pitch between three and six times a target width of the contact holes.

18. A mask set for use in the method of claim 1 and embodying the first pattern which includes a desired dark isolated feature in a bright local region, and the second pattern which is dark in a region substantially corresponding to said bright local region and light in a wider region around said local region.

19. A mask set according to claim 18 wherein said mask set comprises a single mask having said first and second patterns embodied in different regions thereof.

20. A mask set according to claim 18 wherein said mask set comprises first and second masks respectively embodying said first and second patterns.

21. A machine readable medium containing machine executable instructions for controlling a programmable patterning device to effect a first pattern including a desired dark isolated feature in a bright local region; and a second pattern that is dark in a region substantially corresponding to said bright local region and light in a wider region around said local region.

22. A method of generating a mask pattern comprising:

identifying a isolated, dense and semi-dense contact holes in a target pattern of contact holes;

defining a first pattern data set representing a first pattern comprising said dark isolated contact hole in a bright local region and being dark around said bright local region, and further comprising said dense contact holes in an extended bright local region and being dark around said extended local region;

defining a second pattern data set representing a second pattern being dark in a region substantially corresponding to said bright local region and said extended bright local region, and being bright in a wider region around said local region and said extended local region, and further comprising said semi-dense contact holes;

defining first and second illumination settings and projection system settings for imaging said first and second pattern respectively;

modifying said first and/or second pattern data sets by applying optical proximity correction in said first and/or second pattern to at least one contact hole based on said first and second illumination settings and projection system settings; and

generating first and second mask patterns using respectively said first and second modified data sets.

23. A machine readable medium containing machine executable instructions for performing computer program comprising program code means that, when executed on a computer system, instruct the computer system to effect a method comprising:

identifying isolated, dense and semi-dense contact holes in a target pattern of contact holes;

defining a first pattern data set representing a first pattern comprising said dark isolated contact hole in a bright local region and being dark around said bright local region, and further comprising said dense contact holes in an extended bright local region and being dark around said extended local region;

defining a second pattern data set representing a second pattern being dark in a region substantially corresponding to said bright local region and said extended bright local region,

and being bright in a wider region around said local region and said extended local region, and further comprising said semi-dense contact holes;

defining first and second illumination settings and projection system settings for imaging said first and second pattern respectively;

modifying said first and/or second pattern data sets by applying optical proximity correction in said first and/or second pattern to at least one contact hole based on said first and second illumination settings and projection system settings; and

generating first and second mask patterns using respectively said first and second modified data sets.